

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in this application.

Listing of Claims

Claims 1-44 (cancelled).

Claim 45 (previously presented). A method of identifying environmental parameters of interest by identifying the presence and abundance of a nucleic acid marker sequence comprising the steps of:

- a. providing a soil sample containing a population of interest;
- b. isolating genomic DNA from the soil sample;
- c. performing a diagnostic PCR-based assay utilizing a plurality of species-specific probes to the nucleic acid marker sequence that shows a correlation to the parameter of interest; and
- d. inferring the presence of the parameter of interest based upon the presence of the nucleic acid marker sequence.

Claim 46 (previously presented). A method of identifying environmental parameters of interest by identifying the presence and abundance of a nucleic acid marker sequence comprising the steps of:

- a. providing a soil sample containing a population of interest;
- b. isolating genomic DNA from the soil sample;
- c. performing a hybridization-based assay utilizing a species-specific probe to the nucleic acid marker sequence that shows a correlation to the parameter of interest; and
- d. inferring the presence of the parameter of interest based upon the presence of the nucleic acid marker sequence.

Claim 47 (currently amended). ~~A~~The method according to claim ~~145~~ or claim ~~246~~, wherein the nucleic acid marker shows a perfect correlation to the parameter of interest.

Claim 48 (currently amended). ~~A~~The method according to claim ~~145~~ or claim ~~246~~, wherein the nucleic acid marker shows a high degree of correlation to the parameter of interest.

Claim 49 (currently amended). ~~A~~The method according to claim ~~145~~ or claim ~~246~~, wherein the nucleic acid marker shows a moderate degree of correlation to the parameter of interest.

Claim 50 (currently amended). ~~A~~The method according to claim ~~145~~ or claim ~~246~~, wherein the environmental parameter of interest is a subsurface oil or natural gas deposit.

Claim 51 (currently amended). ~~A~~The method according to claim ~~145~~ or claim ~~246~~, wherein the environmental parameter of interest is a dynamic change that occurs during an oil and gas deposit's development that affect its hydrocarbon composition, migration, depletion, and hydrogen sulfide production.

Claim 52 (currently amended). ~~A~~The method according to claim ~~145~~ or claim ~~246~~, wherein the environmental parameter of interest is a mineral deposit.

Claim 53 (currently amended). ~~A~~The method according to claim ~~145~~ or claim ~~246~~, wherein the environmental parameter of interest is an indicator of the mineral deposit's composition.

Claim 54 (currently amended). ~~A~~The method according to claim ~~145~~ or claim ~~246~~, wherein the environmental parameter of interest is an agricultural pest.

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Response dated March 6, 2006

Response to Election/Restriction Requirement of February 6, 2006

Claim 55 (currently amended). ~~A~~The method according to claim ~~145~~ or claim ~~246~~,
wherein the environmental parameter of interest is an industrial organic chemical.

Claim 56 (currently amended). ~~A~~The method according to claim ~~145~~ or claim ~~246~~,
wherein the environmental parameter of interest is water.